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Review of the Texas Emissions Reduction Plan (TERP) Program for Political Subdivisions, Institutions of Higher Education & State Agencies

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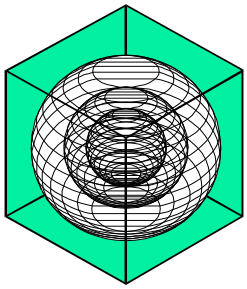

ENERGY SYSTEMS LABORATORY
Texas A&M Engineering Experiment Station
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Disclaimer

INTRODUCTION

This report provides a concise review of the Energy Systems Laboratory's experience in evaluating the Texas Emissions Reduction Plan (TERP) Program for Political Subdivisions, Institutions of Higher Education & State Agencies (Texas Health and Safety Code, Section 388.005).

LEGISLATIVE HISTORY

Historical Background

In 2001, the 77th Texas Legislature passed Senate Bill 5 (SB5), also known as the Texas Emissions Reduction Plan (TERP), to amend the Texas Health and Safety Code. The legislation mandated fundamental changes in energy use to help the state's political jurisdictions to comply with the Federal Clean Air Act standards. It applied to all political subdivisions within Texas' 38 'non-attainment' counties, and was later expanded by adding 3 counties to a total of 41 'non-attainment' counties.

To achieve the clean air and emissions reduction goals of the TERP, SB5 created a number of Energy Efficiency / Renewable Energy (EE/RE) programs for consideration in the State Implementation Plan (SIP). In one of these programs, SB5 required political subdivisions to reduce their electrical consumption by five percent (5%) annually for five years beginning January 1, 2002. SB5 required each political subdivision to annually report to the State Energy Conservation Office (SECO), using forms provided by SECO, on their efforts and progress under this program.

In 2007, the 80th Texas Legislature passed Senate Bill 12 (SB12), which extended the timeline set in SB5 for another six years, through 2011. SB12 also expanded the program to include institutions of higher education and state agencies, in addition to political subdivisions, and allowed for certain exemptions.

From the establishment of the TERP, in SB5, 2001, the Energy Systems Laboratory (A.K.A. ESL or Laboratory) was tasked with the evaluation of the NOx emission reduction of the State EE programs (Sec. 386.205). This responsibility was further enhanced during the 79th Legislature (2005) through House Bill 2481 (HB2481), when the Laboratory was tasked with assisting the Texas Commission on Environmental Quality (TCEQ) and affected political subdivisions in quantifying, as part of the state implementation plan, credits for NOx emissions reduction attributable to various EE and RE programs under TERP.

Senate Bill 898

In 2011, the 82nd Legislation passed Senate Bill 898 (SB898), which extended the program for another ten years, beginning Sept 1, 2011. SB898 also revised the electrical consumption reduction goal to be "at least" 5% each year. SB898 assigned SECO with the task to develop and make available a

standardized form for reporting purposes. In SB898, every entity is required to report its goal, its efforts to meet the goal, and progress it has made. SB898 officially tasked the Laboratory to calculate energy savings and estimated NOx emissions reduction for the program for each of the political subdivisions, institutions of higher education and state agencies. The Laboratory is to perform this task based on the information collected by SECO, and is to provide its analysis to the Texas Commission on Environmental Quality (TCEQ), the United States Environmental Protection Agency (US EPA), and the Electric Reliability Council of Texas (ERCOT) to help with long-term forecasting and in estimating NOx pollution reduction.

EVALUATION OF THE PROGRAM THROUGHOUT THE YEARS

Since 2005, the Laboratory has calculated the electricity savings and resultant NOx emissions reductions from the reported savings from the political subdivisions, institutions of higher education and state agencies and reported them in the Laboratory's annual reports, which were submitted to the TCEQ. In 2005 and 2006 data were provided in various formats to the Laboratory by SECO that required conversion into a uniform format. In 2007 – 2011 the quality of the information improved compared to 2005 and 2006. However, even in 2007-2011, much of the information provided by SECO remained inadequate to accurately calculate savings. For example, the information reported often represented aggregated information from more than one building, with one annual electricity consumption value that makes it impossible to adjust the data for the influence of varying weather conditions throughout the course of a year. Since 2007, of a total of over 780 known entities that are required to report, 345 entities have submitted partial reports over the years. A negligible number of entities requested exemptions. Very few of the entities that did report actually reported the electricity consumption for consecutive years, which are required in order to evaluate whether total annual consumption increased or decreased.

Relationship to the TERP program's goal of 5% annual reduction in electricity consumption

A total of 159 political subdivisions (of the required 780 known entities) submitted at least a partial report to SECO during at least one year of FY 2010 and FY 2011. Only 41 of these political subdivisions submitted total annual kWh consumption for both 2010 and 2011 (see Appendix, Table 1 for details). Based on a simple gross consumption comparison of these 41 entities, 21 subdivisions reported consumption increases rather than reductions. The gross consumption of all 41 subdivisions *increased* by 2.1% from 2010 to 2011. The 33 subdivisions that did not require adjustments for changes in building area or other factors, showed an aggregated consumption *increase* of 0.4%. Essentially, with the available data, *the information the Laboratory received does not imply a significant change in electricity consumption from 2010 to 2011* as required by the TERP.

In addition, with the minimal information available, it is not possible for the Laboratory to appropriately adjust the data for the influence of varying weather conditions on the consumption for the two years, much less for changes in the use of buildings or modifications to buildings covered. However, several subdivisions did note large increases or decreases due to other factors, such as: a substantial addition to the track mileage in the Dallas Area Rapid Transit District; the strong dependence of the consumption of entities like the MUDs; the Brazos River Authority on the amount of water they must pump, and other specific circumstances. While we know that other energy efficiency efforts are indeed being undertaken by political subdivisions (for example, by examining the applications for LoanSTAR funds, and through other means), this is not being reflected directly in the reports submitted to the SECO.

Since SB 898, 2011

SB898 was written to be an opportunity to improve the quality of information collected from the reporting entities and hence increase the validity and accuracy of the energy savings and emissions reduction calculations, which are the mechanism for evaluating the program. During the first quarter of 2012, the Laboratory, working with SECO, devised and proposed to SECO a standardized form for use by political subdivisions, institutions of higher education and state (see Appendix, Figure 1). The Laboratory hopes that this form, or a similar version of it will be utilized in the future.

OBSERVATION

Although dozens of political subdivisions, institutions of higher education and state agencies have conscientiously complied with the reporting requirements, the vast majority have not. In addition, the information filed with SECO has been consistently inadequate for the accurate calculation of weather-normalized energy savings. Therefore, the Laboratory is unable to provide an accurate analysis that is required for evaluating the program effectiveness. The Laboratory recently developed and provided an improved reporting form to SECO, which could slightly improve the ability to monitor the program and its effect on energy savings and NOx emissions reduction.

APPENDIX

Table 1: Summary analysis of reduction in electricity consumption in the 41 subdivisions that submitted total kWh for both 2010 and 2011

Entity Number		2010 Electricity	2011 Electricity	% of Reduction	Area Normalized
3	City of Allen	18,569,459	20,140,948	-8%	
27	City of Bastrop	3,173,740	3,568,173	-12%	26%
35	City of Benbrook	2,064,548	2,060,393	0%	
111	City of Fair Oaks Ranch	1,769,641	2,465,085	-39%	
132	City of Georgetown	23,102,289	29,754,281	-29%	
133	City of Gilmer	2,872,161	3,258,889	-13%	
155	City of Helotes	275,682	513,328	-86%	
167	City of Houston	1,281,885,823	1,244,198,214	3%	
183	City of Jonestown	538,567	668,745	-24%	
190	City of Keller	5,853,696	5,747,907	2%	
244	City of McKinney	23,324,987	23,391,531	0%	
247	City of Melissa	1,068,440	1,744,886	-63%	
275	City of North Richland Hills	11,691,582	12,322,399	-5%	
308	City of Plano	49,799,600	48,436,017	3%	
309	City of Pleak (Village)	27,954	25,223	10%	
335	City of Rockwall	6,797,431	5,959,861	12%	
340	City of Rosenberg	10,797,840	10,680,485	1%	
349	City of San Antonio	182,376,263	167,696,831	8%	
376	City of Southlake	6,386,072	6,105,935	4%	
417	City of Warren City	100,818	93,447	7%	
456	County of Ellis	10,118,836	9,674,606	4%	0%
457	County of Fort Bend	26,886,768	26,342,642	2%	
459	County of Gregg	13,222,186	1,322,186	90%	It appears that 2010 data should be the same as 2011 data - 2010 data reported would be about 10% of typical building use for area reported
461	County of Hardin	2,248,912	2,241,630	0%	
478	County of Travis	39,038,769	40,600,200	-4%	
485	San Antonio Water System (SAWS)	271,864,649	310,518,802	-14%	
486	City of Addison (Town)	9,987,041	10,667,318	-7%	
504	Upper Trinity Regional Water District	23,462,446	27,405,435	-17%	
514	Orange County Navigation and Port District	152,176	155,000	-2%	
525	North Texas Municipal Water District	300,510,000	338,994,000	-13%	
1259	Dallas Area Rapid Transit	106,497,982	162,453,995	-53%	Note - DART added significant new capacity - don't have appropriate way to normalize
1504	Texas Christian University	79,989,270	79,301,270	1%	10%
1505	Fort Bend County MUD No. 25	3,191,293	4,236,741	-33%	
1514	Chelford City Municipal Utilty District	8,647,714	7,907,577	9%	
1520	Harris County Municipal Utility District 102	2,868,787	2,733,084	5%	
2045	Brazos River Authority	38,504,472	8,929,103	77%	Not possible to normalize appropriately
2048	Johnson County Special Utility District	5,134,099	5,581,532	-9%	
2049	North Mission Glen Municipal Utility District	2,261,161	1,962,753	13%	
2052	Harris County Water Control & Improvement District No. 109	985,343	1,295,322	-31%	
2053	Sienna Plantation MUD No1	5,838,551	6,333,770	-8%	
2057	Faulkey Gully Municipal Utility District	2,383,420	2,530,257	-6%	
	Total consumption	**2,586,270,468**	**2,640,019,801**	**-2.1%**	Unadjusted total % savings
	Total w/o normalized area	**2,373,268,454**	**2,383,699,571**	**-0.4%**	Adjusted total % savings

159 submitted some form of report in either 2010 or 2011
41 submitted annual total electric data in both years

Figure 1. Form proposed by the ESL during 2012

SECO
State Energy Conservation Office

BUILDING / FACILITY ENERGY CONSUMPTION DATA SHEET

For: Political Subdivisions, Institution of Higher Education, and State Agencies

Energy Systems Laboratory

Purpose of this document: *As mandated by the 82nd Legislature (2011), each political subdivision, institution of higher education or state agency shall establish a goal to reduce the electric consumption by the entity by at least 5% each state fiscal year for 10 years, beginning September 1, 2011. Each entity annually shall report to the State Energy Conservation Office (SECO), on forms provided by SECO, regarding the entity's goal, the entity's efforts to meet the goal, and progress the entity has made. An entity that does not attain the 5% goal must include in the report justification that the entity has already implemented all available cost-effective measures. [Section 388.005, Health and Safety Code].*

This form is intended to partially fulfill the reporting requirement.

Instructions: *1. Complete your contact information on the right.*
2. Complete the table below for each separate utility service meter (make more copies if necessary).
3. Change the default dates that appear on this form to reflect the dates your utility bills cover.

AGENCY/INSTITUTION: _____

CONTACT PERSON (Name & Title): _____

ADDRESS: _____

CITY: _____ **ZIP:** _____

PHONE: _____ **EMAIL:** _____

ENERGY CONSUMPTION DATA FOR A CONSECUTIVE 12-MONTH PERIOD:

Beginning: 01/01/2012 mm/dd/yyyy **Ending:** 12/31/2012 mm/dd/yyyy

Specify Name of Utility Provider			Electric Provider:			Water Provider:	Gas Provider:	Other Utility Provider:
Specify Utility Meter Number			Meter Number:			Meter Number:	Meter Number:	Meter Number:
Month	**From mm/dd/yy**	**To mm/dd/yy**	**Electric Consumption**	**Electric Demand kW**	**Electric Demand Charged kW**	**Water Consumption** *Please specify the Units:* ○ **100 Gallons** ◉ **1,000 Gallons**	**Natural Gas Consumption** *Please specify the Units:* ○ **CCF** ○ **MCF** ◉ **Therms**	**Other Fuel Consumption** *Specify Units:* _____
1st	01/01/2012	01/31/2012						
2nd	02/01/2012	02/28/2012						
3rd	03/01/2012	03/31/2012						
4th	04/01/2012	04/30/2012						
5th	05/01/2012	05/31/2012						
6th	06/01/2012	06/30/2012						
7th	07/01/2012	07/31/2012						
8th	08/01/2012	08/31/2012						
9th	09/01/2012	09/30/2012						
10th	10/01/2012	10/31/2012						
11th	11/01/2012	11/30/2012						
12th	12/01/2012	12/31/2012						

☐ ***For future reporting, if you would like to avoid the need to fill in and submit the information to the State Energy Conservation Office by yourself, please check the box and sign below.***

I hereby authorize the Energy Systems Laboratory of the Texas A&M University System to receive utility bills directly from the above utility providers.

_____ Signature _____ Date